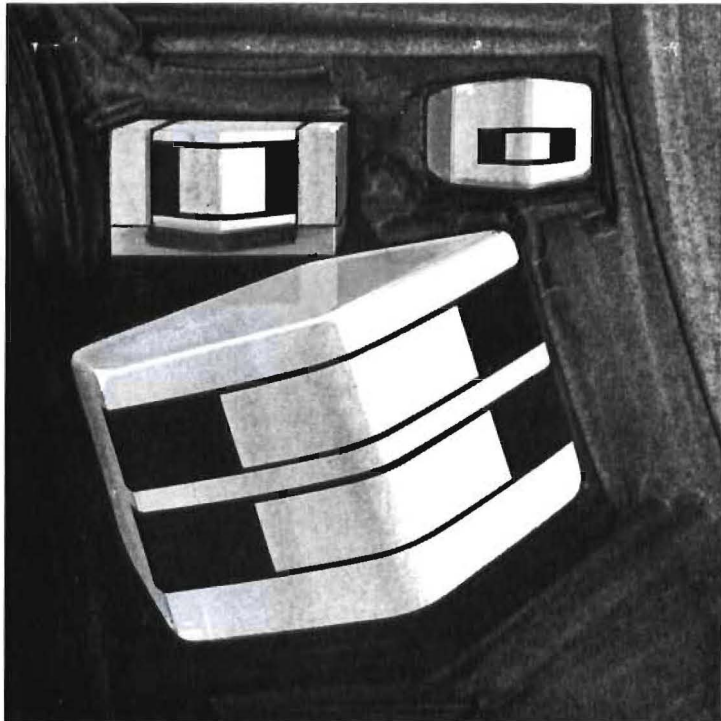


# **DURACORE<sup>®</sup>**



**LONG LIFE REPLACEMENT HEADS  
FOR THE PROFESSIONAL  
BROADCASTER AND DUPLICATOR**

## **NORTRONICS<sup>®</sup>**

# GOOD NEWS FOR RECORDING PROFESSIONALS

## Direct replacement magnetic heads with ten times the life expectancy of conventional HyMu 80 replacements!

### The need . . .

Cartridge and reel-to-reel recorders used by broadcasters and recording studios are subject to demanding, continuous operations. Ordinarily, this means frequent replacement of magnetic heads along with costly service and downtime. Professional recording equipment users have long recognized the practical and economic need for magnetic heads with greatly-extended wear life that would directly reduce operational costs by eliminating electronic adjustments, requiring fewer service calls and cutting recorder downtime.

Materials such as ferrite have been applied and unquestionably are an improvement over conventional HyMu 80® heads. Nevertheless, while they wear longer, they also present certain mechanical and electrical disadvantages for users.

### New Duracore . . .

Nortronics now offers a new series of direct replacement magnetic heads that require no changes, electrically or mechanically, to professional reel-to-reel and cartridge recorders. These heads, constructed with a new wear-resistant material called DURACORE, will provide ten times the operational lifespan of conventional HyMu 80 replacements to yield meaningful cost advantages for broadcasters and recording studios.

### What is Duracore . . .

Duracore is a Permalloy-type (HyMu 80) material containing less than 1% (by weight) of small, hard, wear-resistant particles dispersed throughout the matrix. These particles help to retard head wear on the vital head contact area as oxide tapes pass over the recording gaps in the head face.

More than three years of extensive testing have proved Duracore to be the ideal material for long-life replacement heads. The **actual wear** of Duracore vs. HyMu 80 is shown in Figure 1 graphed for a relative volume of wear vs. number of tape passes.

Here, a wear life better than ten times that of conventional HyMu 80 replacements can be readily seen.

Over the years, numerous solutions to head wear problems have been adopted. Many long-wearing core materials have been tried as alternatives to commonly-used Permalloy cores. For example, Alfenol is quite wear resistant, but is difficult to manufacture due to its mechanical brittleness. It also has inferior electrical characteristics when compared to Permalloy. Ferrites, too, provide better wear resistance but suffer, unfortunately, from particle pullout and gap erosion. Perhaps just as important, ferrite and Alfenol are more expensive than laminated Permalloy cores.

Other materials have been tried as long-wear coatings for head contact areas. These include ceramic and chromium materials which have proved too expensive to be practical. These materials also frequently require special core shapes which adversely affect important low-frequency response.

Duracore replacement heads, however, are the best of both worlds. They provide excellent wear resistance for long life, are not too costly and are easy to work with in the manufacturing process. Now, Nortronics makes direct Duracore replacement heads for many popular professional reel-to-reel and cartridge recorders/players.

Duracore replacements listed and cross-referenced here are currently available for recording equipment manufactured by many well-known companies including:

- |                             |                       |
|-----------------------------|-----------------------|
| • Ampex                     | • Sparta              |
| • Gates (ATC)               | • Magnecord           |
| • Scully                    | • Crown International |
| • Telex                     | • RCA                 |
| • Collins                   | • Spotmaster          |
| • International Tapetronics | • Viking              |

As times goes by, Nortronics will be offering Duracore replacement heads for many other recorders and these will be listed in future reprints of this publication. However since there is a possibility that Duracore replacements not listed in the latest printing are, nevertheless, available, please contact us to be certain.

### Expect the best . . .

Users who select Duracore direct replacement heads for their professional recording equipment can expect ten times more useable life; far fewer service calls and greatly-reduced equipment down-time. The net result will be an important savings in operational costs which can reflect directly into profitability on the bottom line.

At Nortronics, we think that's important!

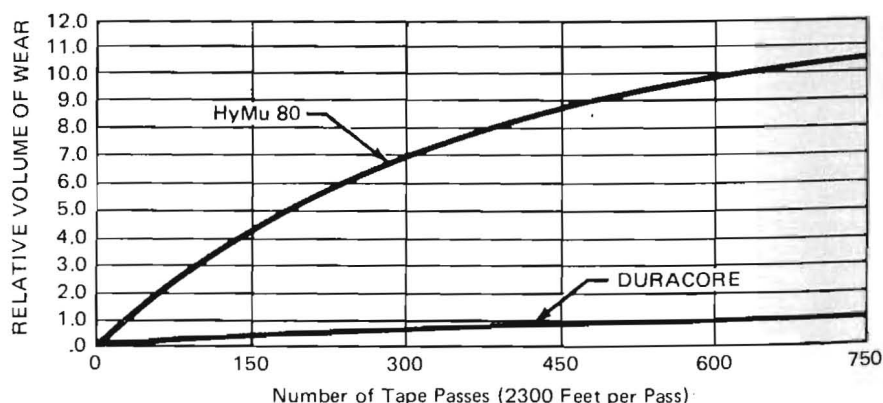


Figure 1. Relative volume of wear versus number of tape passes.

® Duracore is a registered trademark of Nortronics Co. Inc.

® HyMu 80 is a registered trademark of Carpenter Technology



# Instructions

The proper Duracore direct replacement head can easily be found from the chart below used in conjunction with Nortronics Professional & Broadcast Head Replacement Guide, Form #8002.

- 1 First locate the manufacturer of your recorder and the equipment model number in the Professional Head Replacement Guide.
- 2 Now, locate the head type in the Professional Head Replacement Guide.

- 3 Finally, refer to the chart below for the proper Duracore Direct Replacement Head number. Duracore & Mu-metal heads are paired below. Duracore models are shown in boldface type.

# Specifications

Head Description Hyperbolic Metal Face Laminated Cores	Nortronics Model Number (No Mount)†	Case Size	O.E.M. Model Number	Head Function	1 kHz Inductance mH	1 kHz Impedance ohms	D. C. Resistance ohms	Gap Spacer mils	1 kHz Crosstalk Rejection dB	Average Constant Current R/P Characteristics, Peak Biased at 1 kHz and Recorded 12 dB Below Tape Saturation				
										Peak Bias Current R.M.S. mA	Peak Bias Voltage R.M.S. volts	Record Current R.M.S. uA	1 kHz Output R.M.S. mV	10 kHz/1 kHz Ratio dB
										Tape Speed 7.5 ips on 3M 176 Tape – Bias Frequency 100 kHz				
Premium 4 Track Stereo .043 in. Track Width .136 in. C to C Track Spacing	1221† <b>1221D†</b>	B	P-B2Q7F LP-B2Q7F	Play	500	2800	350	.050	50	–	–	–	1.3	+5
Premium 2 Track Stereo .080 in. Track Width .160 in. C to C Track Spacing	2001† <b>2001D†</b>	B	P-B2H7K LP-B2H7K	Record/Play	400	2500	440	.100	55	0.35	65	40	2.6	+5
	2003† <b>2003D†</b>	B	P-B2H4R LP-B2H4R	Record	50	340	120	.500	50	0.65	20	.80	–	–
	2007† <b>2007D†</b>	B	P-B2H6K LP-B2H6K	Record/Play	200	1400	230	.100	50	0.65	52	60	1.8	+5
	2010 <b>2010D</b>	B	P-B2H8R LP-B2H8R	Record	10	75	30	.500	50	2.0	9.5	170	–	–
Premium 2 Track Mono .080 Track Width Track .040 Off Center	2608 <b>2608D</b>	B	P-B1HY8K LP-B1HY8K	Record/Play	20	130	30	.100	–	2.4	20	170	0.55	+4
										Tape Speed 15 ips BASF TP-18 Tape – Bias Frequency 500 kHz Audio Freq. ① 8 kHz and ② 80 kHz				
Cassette 2 Track Dual Channel .056 in. Track Width .088 in. C to C Track Spacing	5201 <b>5201D</b>	W	W2P8N L-W2P8N	Record	10	80	45	.200	50	5.0	35	115	–	–
	5205 <b>5205D</b>	W	W2P8F L-W2P8F	Play	20	140	50	.050	50	–	–	–	0.70①	-12②
Premium Cassette Dual Channel .056 in. Track Width .088 in. C To C Track Spacing	5220 <b>5220D</b>	W	P-W2P11N LP-W2P11N	Record	2	15	9	.200	50	2.5	15	320	–	–
	5221 <b>5221D</b>	W	P-W2P11F LP-W2P11F	Record/Play	2	20	13	.050	50	6.5	21	400	0.45①	-12②
Premium Cassette 4 Track 4 Channel .021 in. Track Width	5410 <b>5410D</b>	W	P-W4J4F LP-W4J4F	Record/Play	80	560	190	.050	55	0.6*	25*	45*	0.18*	-10*
	5411 <b>5411D</b>	W	P-W4J8N LP-W4J8N	Record	10	85	60	.200	55	1.8	21	110	–	–
	5413 <b>5413D</b>	W	P-W4J8F LP-W4J8F	Play	20	150	65	.050	55	–	–	–	0.50①	-12②
	5414 <b>5414D</b>	W	P2-W4J11N LP2-W4J11N	Record	2	15	25	200	55	2.0	8	210	–	–
										Tape Speed 7.5 ips on 3M 176 Tape – Bias Frequency 100 kHz				
4 Track 4 Channel .037 in. Track Width .071 in. C to C Track Spacing	5610 <b>5610D</b>	B	BQQ4K L-BQQ4K	Record/Play	100	675	250	.100	40	0.5	32	60	0.7	+4
Premium 3 Channel .043 in. Track Width .100 in. Track Spacing	5701† <b>5701D†</b>	B	P-B3Q7K LP-B3Q7K	Play	350	2300	820	.100	50	–	–	–	1.3	+4
	5703† <b>5703D†</b>	B	P-B3Q4R LP-B3Q4R	Record	50	430	275	.500	50	0.6	15	60	–	–
8 Track Stereo .020 in. Track Width .127 in. C to C Track Spacing	5830 <b>5830D</b>	B	E-B2L7K LE-B2L7K	Play	400	2800	710	.100	50	–	–	–	0.8③	-9③
4 Track Mono .043 in. Track Width	7610 <b>7610D</b>	B	P-B1QY6F2 LP-B1QY6F2	Play	200	1300	150	.050	–	–	–	–	1.2	+5

† Add 50 to number for rear mount.  
\* Tested at 1.875 ips, 100 kHz bias frequency, 1 kHz and 10 kHz audio frequencies.  
③ Tested at 3.75 ips.

Head Description Hyperbolic Metal Face Laminated Cores	Nortronics Model Number (No Mount)†	Case Size	O.E.M. Model Number	Head Function	1 kHz Inductance mH	1 kHz Impedance ohms	D. C. Resistance ohms	Gap Spacer mils	1 kHz Crosstalk Rejection dB	Average Constant Current R/P Characteristics, Peak Biased at 1 kHz and Recorded 12 dB Below Tape Saturation				
										Peak Bias Current R.M.S. mA	Peak Bias Voltage R.M.S. volts	Record Current R.M.S. µA	1 kHz Output R.M.S. mV	10 kHz/1 kHz Ratio dB
										Tape Speed 7.5 ips on 3M 206 Tape – Bias Frequency 100 kHz				
Professional Full Track .240 in. Track Width	9102 9102D	B	PR-B1F12N LPR-B1F12N	Play	600	4000	285	.200	–	–	–	–	8	+3
	9103 9103D	B	PR-B1F8R LPR-B1F8R	Record	10	70	10	.500	–	5	22	400	–	–
	9104 9104D	B	PR-B1F11R LPR-B1F11R	Record	4	27	3.3	.500	–	8.5	15	640	–	–
	9109 9109D	B	PR-B1F5N LPR-B1F5N	Record/Play	4	30	6	.200	–	12	18	72	0.75	–1
	9111 9111D	B	PR-B1F6N LPR-B1F6N	Record/Play	200	1200	82	.200	–	3	100	110	4	+1
	9113 9113D	B	PR-B1F14R LPR-B1F14R	Record	2	13	2.4	.500	–	12	10	900	–	–
Professional 2 Track Stereo .082 in. Track Width .156 in. C to C Track Spacing	9202 9202D	B	PR-B2H12K LPR-B2H12K	Play	650	4000	420	.100	50	–	–	–	2.8	+3
	9203 9203D	B	PR-B2H8R LPR-B2H8R	Record	10	70	22	.500	50	3	16	275	–	–
	9204 9204D	B	PR-B2H11R LPR-B2H11R	Record	4	30	15	.500	50	6	10	460	–	–
	9205 9205D	B	PR-B2H4R LPR-B2H4R	Record	50	330	100	.500	50	0.65	30	85	–	–
	9206 9206D	B	PR-B2H9K LPR-B2H9K	Record/Play	10	70	16	.100	50	6.5	20	450	0.35	+2
	9209 9209D	B	PR-B2H5L LPR-B2H5L	Record/Play	4	25	4.5	.160	50	8	13	650	0.30	+1
	9213 9213D	B	PR-B2H7K LPR-B2H7K	Play	400	2700	420	.100	50	–	–	–	2.8	+3
	9214 9214D	B	PR-B2H14R LPR-B2H14R	Record	2	17	10	.500	50	8.5	8	640	–	–
Dummy Head	7605† 7605D†	B	H801016 H800163	Tape Support	–	–	–	–	–	–	–	–	–	–

† Add 50 to number for rear mount.